

## 50 CFR Part 17

RIN 1018-AB52

**Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Marsilea villosa* ('ihi'ihii)****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

**SUMMARY:** The U.S. Fish and Wildlife Service (Service) determines a fern, *Marsilea villosa* ('ihi'ihii), to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). This species is known only from three small populations, two located on the island of Oahu, and a third from the island of Molokai, Hawaii. The greatest immediate threats to the survival of this species are competition from naturalized, exotic vegetation; habitat degradation by off-road vehicles, and grazing by cattle. This rule implements the protection and recovery provisions provided by the Act for this species.

**EFFECTIVE DATE:** July 22, 1992.

**ADDRESSES:** The complete file for this rule is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

**FOR FURTHER INFORMATION CONTACT:** Derral R. Herbst, at the above address (808/541-2749 or FTS 551-2749).

**SUPPLEMENTARY INFORMATION:****Background**

*Marsilea villosa* was first collected in Nuuanu Valley, Oahu, in 1817, by Louis Charles Adelbert von Chamisso, the botanist on a Russian world exploring expedition. Chamisso's fern collections were studied by George Kaulfuss who recognized the *Marsilea* as a new species and named it *Marsilea villosa* because of its hairy leaves (Kaulfuss 1824). The type specimen was deposited in the Herbarium of Higher Plants in Leningrad. At that time it apparently was widespread on Oahu, and, during the early to middle 1900's, had been collected at several sites including Barbers Point, Ewa, Kaimuki, and Makapuu, all on the southern side of the island (Brueggemann 1999). Today, only two populations are known from Oahu. One is located at Koko Head, growing on land owned by the City and County of Honolulu. The other is on the Lualualei Naval Reservation.

On the island of Molokai, *Marsilea* was first collected in 1928 at Mokio (Degener 1936), and in 1948 at Moomomi. It was last seen at those sites, along with another population in the Ilio Point area, during the mid 1970's. Surveys of these areas during 1984 failed to find the plant. In 1989, a small population was discovered on privately owned land near Laau Point, the southwestern tip of the island (Winona Char, botanical consultant, *in litt.*, 1989). *Marsilea* was collected on the eastern side of the island of Niihau, at Loe Lake in 1949. The fern was not found during a 1984 survey. This area is currently used for cattle grazing.

The three remaining populations at Koko head and the Lualualei Naval Reservation on the island of Oahu, and near Laau on Molokai are small and isolated from each other. The largest site is in the Lualualei Valley on the Naval Reservation where clumps of this plant are scattered among kiawe trees (*Prosopis pallida*), in an area of approximately 6 acres. The Koko Head population covers about 0.5 acres, but comprises the largest number of individual plants. The population on Molokai measures roughly 7 feet by 25 feet. The fern's habitat is dynamic, however, and may shrink or swell from year to year depending upon rainfall and other factors.

*Marsilea villosa* is an aquatic to semiaquatic fern that grows in small shallow depressions on level or gently sloping terrain. *Marsilea villosa* requires periodic flooding to complete its life cycle. The spore cases normally are produced as the habitat begins to dry up and do not ripen unless the plant is drought-stressed (Brueggmann 1986). When sufficient water is present, the plant reproduces vegetatively with young plants being produced on creeping rhizomes.

Similar in appearance to a four-leaved clover, it is 5–25 centimeters (2–10 inches) tall with four leaflets at the tip of the stem. The leaves arise in pairs, and, when fertile, each bears a small, hard spore case on a short stalk at its base. All parts of the plant may be covered with rust-colored hairs (Brueggmann 1989, St. John 1981). *Marsilea villosa* is the only member of the genus native to Hawaii and is closely related to *M. vestita* of the western coast of the United States (Forbes 1920, Christensen 1925, Johnson 1986).

The greatest immediate threats to the survival of this species are the encroachment and competition from naturalized, exotic plants, and the disturbance of areas where the plant grows by off-road vehicles or by grazing cattle. The extremely small number and size of the populations and their restricted distribution makes the species more vulnerable to stochastic events.

Federal action on this plant began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. In that document, *Marsilea villosa* was considered endangered. On July 1, 1975, the Service published a notice in the *Federal Register* (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act, and giving notice of its intention to review the status of the plant taxa named therein. As a result of that review, on June 16, 1976, the Service published a proposed rule in the *Federal Register* (41 FR 24523) to determine approximately 1,700 vascular plant species, including *Marsilea villosa*, to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–

51 and the July 1, 1975, *Federal Register* publication.

General comments received in relation to the 1976 proposal are summarized in an April 28, 1978 *Federal Register* publication (43 FR 17909). In 1978, amendments to the Act required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. On December 10, 1979, the Service published a notice in the *Federal Register* (44 FR 70796) withdrawing the portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82479), September 27, 1985 (50 FR 39525), and February 21, 1990 (55 FR 6183); *Marsilea villosa* was included as a Category 1 candidate on all three lists, indicating that the Service had substantial information on biological vulnerability and threats to support preparation of a listing proposal.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires all petitions pending on October 1, 1982, be treated as having been newly submitted on that date. The latter was the case for *Marsilea villosa* because the Service had accepted the 1975 Smithsonian report as a petition. On October 13, 1983, the Service found that the petitioned listing of this plant was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published in the *Federal Register* on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. The finding was reviewed in October of 1984, 1985, 1986, 1987, 1988, 1989, and 1990. On February 15, 1991, the Service published in the *Federal Register* (56 FR 6349) a proposal to list *Marsilea villosa* as endangered. This proposal was based primarily on information supplied by a status report and master's thesis by Marie Brueggmann, and observations by botanists. The Service now determines *Marsilea villosa* to be endangered with the publication of this rule.

#### Summary of Comments and Recommendations

In the February 15, 1991 proposed rule and associated notifications, all interested parties were requested to submit factual reports or information relevant to a final decision on listing. The public comment period ended on April 16, 1991. Appropriate State

agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice inviting general public comment was published in the "Maui News" on February 28, 1991, and in "The Honolulu Advertiser" on March 2, 1991. Two letters of comment were received, one from the Department of the Navy, the other from the State Executive Chambers; both offered information which has been incorporated into this final rule, but neither stated support for nor opposition to the listing of this species.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Marsilea villosa* should be classified as an endangered species. Procedures found at section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Acts were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. The five factors and their application to *Marsilea villosa* Kaulf. ('ihiihi) are as follows:

##### A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

Shading and competition for water by naturalized, exotic plants probably are the two greatest threats affecting this species. This threat from encroaching, competing exotic species affects all the known populations of the plant.

Several activities promote this invasion by alien plant species. For example, the Koko Head population has been damaged by off-road vehicles which illegally enter the area; off-road vehicles not only damage or destroy plants, but also disturb the soil promoting the ingress of competing exotic vegetation. While this population has been partially fenced through a management agreement between the City and County and The Nature Conservancy of Hawaii, the threat of damage from vehicles remains.

Some of the sites that once supported this plant have been heavily grazed by cattle. The Lualualei population grows in an area leased to private concerns for cattle pastureland. Grazing and trampling by cattle damage or destroy plants and allow intrusion by exotic vegetation; cattle also carry seeds of

exotic species into the area. However, certain benefits to the Lualualei population may be derived from the presence of the cattle, as their grazing on the exotic vegetation in some respects helps to control it, and their trampling develops potholes that may increase the fern's habitat. The Lualualei Naval Reservation is wetter than the western sides of Niihau and Molokai, thus alien plants are favored at this site. On Molokai and Niihau, where exotic vegetation in the temporary ponds is less abundant, the benefit that the fern would gain from the removal of competing alien plants or development of additional potholes resulting from grazing would not outweigh the loss of fern from trampling.

Although not documented, the Molokai population probably is adversely affected by the axis deer which are known to browse in the area. Axis deer foot prints have been seen in the mud at this site. Cattle graze nearby, but apparently not on the site.

Many of the sites that once supported the fern now contain sugar cane fields, industrial parks, housing developments, and pastures. The population at Barbers Point has been replaced by an industrial park and sugar cane fields; urban and resort developments also are proposed for the area. The Molokai site is part of a large, privately owned parcel that may be considered for future development. The species was once widespread and could be discovered at additional sites that could potentially be threatened by urbanization.

#### *B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

Not known to be a factor, but a small number of plants have been transplanted into private gardens, aquaria, or fish ponds, and specimens occasionally are collected for herbaria. The species is attractive and could be sought by collectors of aquatic plants or rare plants. Unrestricted collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity, and would seriously impact the species. Disturbance to the area by trampling would promote greater ingress by competing exotic species.

#### *C. Disease or Predation*

Not known to be applicable.

#### *D. The Inadequacy of Existing Regulatory Mechanisms*

At the present time, no State laws or existing regulatory mechanisms protect *Marsilea villosa* or prevent its further

decline. However, Federal listing automatically invokes listing under Hawaii State law, which prohibits taking and encourages conservation by State government agencies. Hawaii's Endangered Species Act (HRS, sect. 195D-4(a)) states, "Any species of wildlife or plant that has been determined to be an endangered species pursuant to the (Federal) Endangered Species Act shall be deemed to be an endangered species under the provisions of this chapter \* \* \*." Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species (sect. 195D-5(c)). Funds for these activities could be made available under section 6 of the Act (State Cooperative Agreements). Listing of this plant therefore reinforces and supplements the protection available to the species under State law. The Federal Act also offers additional protection to the species, because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy an endangered plant in an area not under Federal jurisdiction in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. It is also a Federal offense to remove and reduce to possession the plant from any area under Federal jurisdiction, or to maliciously damage or destroy the plant in any such area. Listing under the Act will augment State and private conservation measures for this species by providing for habitat protection through section 7 and recovery planning.

#### *E. Other Natural or Manmade Factors Affecting its Continued Existence*

The small number of populations and of individual plants makes the species more vulnerable to certain threats such as stochastic events. A single man-caused or natural environmental disturbance could destroy a significant percentage of the individuals of this species. The Koko Head population has suffered localized damage from campfires, and fire remains a potential threat.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Marsilea villosa* as endangered. The three remaining populations face threats from the encroachment and competition from exotic species of plants, damage from off-road vehicles, and grazing and

trampling by domestic cattle. Urbanization and fires remain as potential threats. Because this species is in danger of extinction throughout all or a significant portion of its range, it fits the definition of endangered as defined in the Act. Critical habitat is not being designated for this plant for the reasons discussed in the "Critical Habitat" section of this rule.

#### *Critical Habitat*

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. Such a determination would result in no known benefit to the species. Two of the three known populations grow on City and County or Federal land; government agencies and the private land owner can be alerted to the presence of the plant without the publication of critical habitat descriptions and maps. The publication of descriptions and maps required when critical habitat is designated would highlight the last known sites for this species and may result in increased threats of vandalism or take. As noted under factor "B," *Marsilea villosa* is an attractive plant and live specimens would be of interest to researchers, curiosity seekers, or collectors of rare or aquatic plants. All involved parties and the landowners have been notified of the general location and importance of protecting the habitat of this species. Protection of the habitat will be addressed through the recovery process and through the section 7 consultation process. Therefore, the Service finds that designation of critical habitat for *Marsilea villosa* is not prudent at this time, because such designation would increase the degree of threat from vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of this species.

#### *Available Conservation Measures*

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the

State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. One of the populations of *Marsilea* is located on the Lualualei Naval Reservation in an area presently leased as pasture. The Department of the Navy will need to consult with the Service regarding this activity.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plant species set forth a series of general prohibitions and exceptions that apply to all endangered plants. With respect to *Marsilea villosa* all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale this species in interstate or foreign commerce; or to remove and reduce to possession any such species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage or destroy listed plants on any other area in knowing

violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because the species is not common in cultivation or in the wild.

Section 9(a)(2)(B) of the Act, as amended, prohibits the removal and reduction to possession as well as the malicious damage or destruction of endangered plant species in areas under Federal jurisdiction. This provision applies to the population of *Marsilea villosa* growing in the Lualualei Naval reservation.

Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, room 432-ARLSQ, Arlington, Virginia 22203-3507 (703/358-2104 or FTS 921-2232; FAX 703/358-2281).

#### National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

#### References Cited

- Brueggmann, M.M. 1986. The phenology, tissue water relations and taxonomy of *Marsilea villosa*. M.S. thesis. Botany Dept., Univ. of Hawaii. Unpubl.
- Brueggmann, M.M. 1989. Unpublished status report on *Marsilea villosa*. U.S. Fish and Wildlife Service. 31 pp.

Christensen, C. 1925. Revised list of Hawaiian pteridophyta. Bernice P. Bishop Museum Bull. 25. 30 pp.

Degener, O. 1936. Fl. Hawaiiensis, fam. 8. Marsileaceae; *Marsilea villosa*. Publ. priv., 2 pp.

Forbes, C.N. 1920. Notes of *Marsilea villosa* Kaulf. Occasional Papers Bernice P. Bishop Museum 7: 47-49.

Johnson, D.M. 1966. Systematics of the new world species of *Marsilea* (Marsiliaceae). Systematic Botany Monographs, vol. 11. 87 pp.

Kaulfuss, G.F. 1824. Enumeratio Filicum quas in itinere circa terram legit Cl. Adalbertus de Chamisso \* \* \* Lipsiae. pp. 271-272.

St. John, H. (C.A. Corn, ed.). 1981. Rare endemic plants of the Hawaiian Islands. Hawaii, Dept. Land Nat. Resources, Honolulu, 74 unnum. pp.

#### Author

The primary author of this final rule is Dr. Derral R. Herbst, Fish and Wildlife Enhancement, Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, P.O. Box 50167, Honolulu, Hawaii 96850 (808/541-2749 or FTS 551-2749).

#### List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and record-keeping requirements, and Transportation Regulation Promulgation.

#### PART 17—[AMENDED]

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding a new family "Marsileaceae-Pepperwort family," in alphabetical order, to the List of Endangered and Threatened Plants:

#### § 17.12 Endangered and threatened plants.

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(h) \* \* \*

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Marsileaceae—Pepperwort family:						
<i>Marsilea villosa</i>	'Ihi'ihi	U.S.A. (HI)	E	474	NA	NA

Dated: June 2, 1992.

**Bruce Blanchard,**

*Acting Director, Fish and Wildlife Service.*

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